

PHYSICAL - KINETIC THERAPY OUTCOMES IN HIP OSTEOARTHRITIS CASES: GENDER DIFFERENCES

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Keywords: hip osteoarthritis, gender, pain, quality of life

Abstract: The characteristics of hip osteoarthritis may be different in the two genders. We aimed to establish if hip osteoarthritis has different influences on the functional capacity in male and female patients and gender differences in medical rehabilitation outcomes. 144 patients hospitalized for hip osteoarthritis were included in the study. All patients followed a rehabilitation program, repeated after 6 and 12 months. Four evaluations by using VAS scale, Lequesne functional index, HAQ index were performed. Statistical analysis was done with EpiInfo program. Secondary osteoarthritis was more common in men. Both genders registered in the hospital a highly significant decrease in pain intensity, but it significantly increased during the free interval of 6 months. Mean pain value for the female patients was higher than in males. The effect of treatment and quality of life of patients with hip osteoarthritis were better in male patients, regardless of the disease stage.

Cuvinte cheie: coxartroza, sex, durere, calitatea vieții

Rezumat: Caracteristicile coxartrozei pot fi diferite la cele două sexe. Ne-am propus să stabilim dacă coxartroza influențează în mod diferit capacitatea funcțională, precum și dacă există diferențe ale rezultatelor recuperării medicale la cele două sexe. 144 pacienți spitalizați pentru coxartroză au fost incluși în studiu. Toți au urmat un program de recuperare, repetat după 6 și 12 luni. S-au efectuat patru evaluări utilizând scala VAS, indicele funcțional Lequesne și indicele HAQ. Pentru prelucrarea datelor statistice s-a folosit programul EpiInfo. Coxartroza secundară a fost mult mai frecventă la bărbați. Ambele sexe au înregistrat în spital o scădere foarte importantă a intensității durerii, dar aceasta a crescut semnificativ pe parcursul intervalului liber de 6 luni. Valoarea medie pentru durere la sexul feminin a fost mai mare decât la bărbați. Efectul tratamentului și implicit calitatea vieții pacienților cu coxartroză sunt mai bune în cazul pacienților de sex masculin, indiferent de stadiul bolii.

INTRODUCTION

The term osteoarthritis indicates a degenerative, non-inflammatory joint disease, characterized by changes in the joint cartilage and bone neoformation reaction accompanied by changes of synovium, synovial fluid and periarticular structures. It is estimated that osteoarthritis is the most common type of joint disease. Hip osteoarthritis is characterized by different clinic signs, from pain to movement restriction of the hip joint, vicious attitudes, hypotrophy of the musculature and disturbances in walking. Surgery represents the first therapeutical step and rehabilitation program will be performed before and after surgical intervention.

The incidence of hip osteoarthritis has been reported to be higher in women than men and it increases significantly in women around the time of menopause.(1,2) The accepted etiology for hip osteoarthritis is the multifactorial one. Risk factors have been classified as modifiable, such as obesity, joint injury, mechanic stress, occupation and nonmodifiable such as gender, age, genetic predisposition or race.(3,4)

Gender differences were reported for the prevalence, incidence, severity of the disease (5,6), but recently these were also described for joint components and systemic biomarkers of joint metabolism.(7)

Several studies found that women have higher prevalence of hip osteoarthritis and greater disability.(8)

Characteristics of the disease may be different in women, other joints are frequently affected and they have greater symptomatic and structural severity.(9)

The complex medical rehabilitation programme in hip osteoarthritis cases has several objectives: amelioration of the pain, regaining stability, regaining mobility, walking re-education, delay of the progressing of the disease, improvement of quality of life of the patients and secondary prophylaxy of complications. These objectives can be fulfilled by the specific therapeutical tools of physical medicine, under the condition that methodology is permanently adapted to the stage of the disease.

PURPOSE

In the current study, we aimed to establish if hip osteoarthritis has different influences on functional capacity in male and female patients and gender differences in medical rehabilitation outcomes of these patients.

METHODS

In a prospective study, between January 2010 and January 2011, we evaluated 144 patients, all Caucasians, with hip osteoarthritis treated in the Emergency Hospital “Avram Iancu”, from Oradea, Romania, who met the inclusion criteria. These were: diagnosis of hip osteoarthritis according to ACR criteria (10) and radiological criteria, age over 18 years, with no

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Article received on 09.01.2013 and accepted for publication on 22.04.2013
ACTA MEDICA TRANSILVANICA June 2013;2(2):256-259

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previous rehabilitation treatment for hip osteoarthritis, possibility of evaluating the patient at least twice a year - for one year, acceptance to perform a kinetic program at home and to comply with the rules of self-management and life style changes. Exclusion criteria: existence of a joint arthroplasty, acute flare of associated disease, presence of disorders that contraindicate our rehabilitation centre procedures (cancer, depression, severe dementia, autoimmune diseases, heart failure NYHA class II to IV, severe kidney diseases, asthma that require oxygen continuously), patients who underwent rehabilitation treatment for other diseases, but had associated hip osteoarthritis (e.g. neurological diseases).

Data was collected according to medical ethics principles. All patients gave the written informed consent for inclusion in the study. Demographic and clinical data included age, gender, height, weight, BMI, other affected joints. Mitchel and Cruess disease staging was used.(11) Hip radiographies were assessed using Kellgren-Lawrence grading system.(12)

All the patients followed a rehabilitation programme for 12 days, repeated after 6 months and took medication for osteoarthritis and for the associated disorders, as recommended by the specialist doctor. Intensive rehabilitation program consisted of: electrotherapy, massage, paraffin application, kinetic therapy. Rehabilitation programme was performed according to specific application rules, following indications/contraindications for use of each procedure.

We performed four evaluations: at admission in the hospital, before patients started the rehabilitation program, at discharge, after 6 months and after 1 year, using VAS pain scale, Lequesne functional index, HAQ index. Assessments at 6 months and 1 year were performed before patients started the rehabilitation programs. Pain assessment was performed with VAS scale. Lequesne index was used to assess severity of hip osteoarthritis.(13) For functional status assessment we used Health Assessment Questionnaire (HAQ).(14) Statistical analysis was done with the help of EpiInfo, version 6.0. It calculated mean values, frequency ranges, standard deviations. Statistical significance was established with the t test and sensitivity to change was evaluated by calculating the effect size.

RESULTS

We divided the study group into two subgroups:

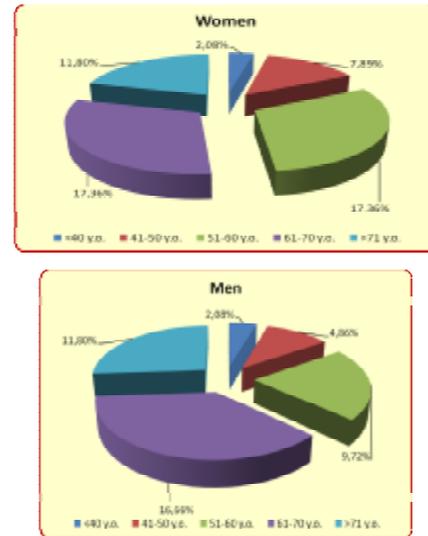
- the first subgroup included 78 women (54.17% of the entire study lot) aged between 25-82 years (mean age 62.0 ± 7.5 years)
- the second subgroup included 66 men (45.83% of the entire study lot), age range 39-82 years (mean age 62.7 ± 7.3 years).

Distribution of cases according to gender and age is presented in figure no. 1. Stage and etiology of the disease are presented in table no. 1.

Table no. 1. Distribution of cases according to gender, stage and etiology of hip osteoarthritis (percentages of total lot)

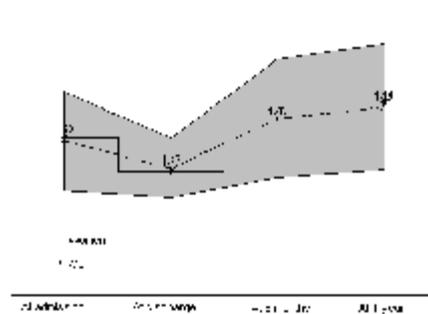
Caracteristics	Women N=78	Men N=66
Stage: Early	5 (6,41%)	11 (16,76)
Evolved	67 (85,89%)	47 (71,21%)
End	6 (7,69%)	8 (12,12%)
Etiology: Primary	67 (85,89%)	49 (74,24%)
Secondary	11 (14,10%)	17 (25,75%)

Figure no. 1. Distribution of cases according to gender and age



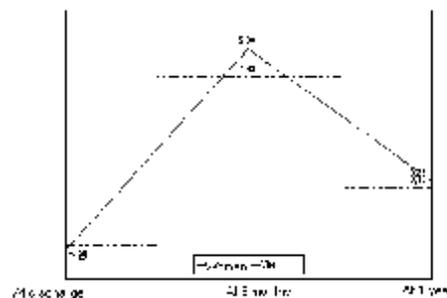
In both groups, primary osteoarthritis was predominant: 85.9% and 74.2%. In our study group, secondary osteoarthritis was 1.8 times more common in men than in women ($p = 0.0074$). In any assessment stage we noted differences between men and women in terms of mean HAQ index (figure no. 2).

Figure no. 2. Evolution of mean HAQ index values in hip osteoarthritis patients



Calculating the sensitivity to change in effect size, it was noticed that at discharge the effect of treatment on men is slightly higher ($ES = -0.56$ for women and $ES = -0.62$ for men), a result which is maintained six months and one year: at six months ($ES = 1.63$ for females and $ES = 2.00$ for males) and 1 year ($ES = 0.19$ for females and $ES = 0.28$ for males) (figure no. 3).

Figure no. 3. Evolution of the treatment size effect on the HAQ index in hip osteoarthritis patients



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Slight differences were noted between genders when following the impact of rehabilitation program on functional status and pain (table no. 2).

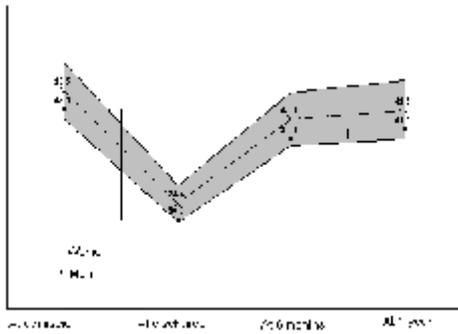
Table no. 2. Evolution of HAQ score and pain (VAS scale) in women and men with hip osteoarthritis. Values are presented as means and standard deviations

	HAQ score		VAS score	
	Women	Men	Women	Men
Admission	1,31±0,26†	1,33±0,29	50,3±6,5*	46,1±5,8
Discharged	1,17±0,16†	1,15±0,14	24,4±4,2*	20,8±4,1
After 6 months	1,43±0,31†	1,43±0,29	43,8±6,1*	39,3±5,2
After one year	1,49±0,33†	1,51±0,35	45,9±6,8*	41,5±5,5

*p< 0,0001; †p>0,05

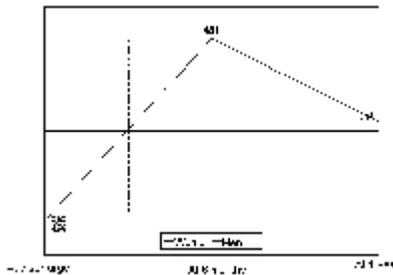
Both men and women registered in the hospital a highly significant decrease in pain intensity (p <0.001), but it significantly increased at 6 months (p <0.001), followed in the next six months by a slight increase in pain (p > 0.05) (table no. 2, figure no. 4).

Figure no. 4. Evolution of the mean values of pain (VAS scale) in hip osteoarthritis patients



The effect size at discharge reveals a strong impact of treatment on pain (ES = - 3.98 for women and ES = - 4.36 for men). At 6 months the treatments effect virtually disappears (ES = 4.61 for females and ES = 4.51 for males). In the next six months the progress of pain score was weak (ES = 0.34 for females and ES = 0.42 for males) (figure no. 5).

Figure no. 5. Evolution of treatment effect size on pain in hip osteoarthritis patients



DISCUSSIONS

Medical rehabilitation is not recommended as first choice treatment in the end stages, we recommended surgical orthopedic surgery, but we took into account the patient's decision for conservative or surgical treatment.

Osteoarthritis is a disease with chronic evolution, progressive, often disabling, mostly affecting people over 50

years, more than 84.72% of the patients belonging to the third age.

In our study group, higher incidence of hip osteoarthritis over the age of 50 years and an increased incidence of women (especially in the 51-60 years-age range) was noticed, which is consistent with most literature data (15-18). Unusually, there were 3 young women (two were 25 years old and one was 26), all with secondary hip osteoarthritis (osteocondritis, coxofemoral luxation and post-traumatic).

An important clinical feature was the clinical stage of the disease. We noted that most patients were in the evolved stage of the disease, only 11.11% of patients were in the early stage.

85.89% of women and 74.24% of men had primary hip osteoarthritis. In our study lot, secondary hip osteoarthritis is 1.5 times more frequent in men than in women.

Pain, measured by VAS scale, showed a wavy trend, decreasing significantly after medical rehabilitation treatment, but increasing during the free interval of 6 months almost to baseline values. Pain increasing occurred similarly in both subgroups.

Monitoring pain, in both genders, we remarked the descending trend in pain score after 2 weeks of medical rehabilitation, highly statistically significant, revealing the immediate favourable effect of the complex physical-kinetic treatment. At subsequent evaluations, the mean pain score increased linearly, maintaining at close values after 6 and 12 months. Women reported statistically significant higher pain scores, at each assessment time. Other studies report lower pain threshold or pain tolerance in women compared to men (19), but gender differences regarding pain intensity were not found by all researchers.(20) The decrease of pain intensity is also mentioned by other authors, who used different complex hydro-physical-kinetic programs.(20-22) Quality of life is improved both short-term and long-term after medical rehabilitation.

HAQ score of quality of life is also modified by the rehabilitation treatment, thus, there was an immediate increase of the quality of life after treatment, followed by a decrease during the free interval of 6 months and it continued to decline until the fourth determination. We can conclude that despite appropriate treatment, we cannot stop the evolution of the disease.

CONCLUSIONS

1. Male patients presented at the first medical consultation evolved or end stages of the disease, because hip osteoarthritis has not affected their quality of life.
2. Pain, measured by VAS scale, showed a wavy trend, gender influencing evolution of the disease.
3. Mean pain value for the female patients included in the present study is higher than mean pain value in male patients.
4. HAQ score of quality of life is also modified by the rehabilitation treatment, regardless the gender of the patients.
5. Quality of life of patients with hip osteoarthritis is better in male patients, regardless of disease stage. Improvement of evaluated parameters was proportionally achieved in both genders.

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